other cause for these changes, there has been one report in the literature of pulmonary changes following acute mercury poisoning. We have made observations showing that the use of thimerosal (Merthiolate), as described in the instructions issued with one brand of incubator, resulted in the liberation of mercury vapor into the incubator and also the excretion of mercury in the urine of the newborn infant.

In this particular study, I wonder whether Dr. Shepard can eliminate this particular possibility by telling us that Merthiolate has not been used.

DR. SHEPARD. It is not in use.

DR. JUNE BRADY, *Cardiovascular Research Institute and Department of Pediatrics, University of California at San Francisco, San Francisco, Calif.* I noticed your incidence of respiratory distress syndrome in full-term infants was 42 per cent (20 out of 48 babies). Does this represent the incidence in your hospital? Most authors suggest that the incidence is less than 1 per cent in full-term infants.

My second question is: Do these children have any exercise intolerance? I think with pulmonary fibrosis one might expect to see arterial desaturation with heavy exercise. A 6-year-old child bicycling as hard as he possibly can might show arterial desaturation as his only abnormality with early pulmonary fibrosis.

DR. SHEPARD. In the first one, I believe the 20 out of 48 you are referring to is about birth weight. Is that correct?

DR. BRADY. Yes.

DR. SHEPARD. The gestational ages of these babies are considerably less than 40 weeks. The 2 children of 39 to 40 weeks' gestation were infants of prediabetic mothers. Actually, a weight of 2,500 grams is the median weight for 35 to 36 weeks' gestation, and on physical examination these babies had the clinical findings of premature infants.

In answer to the second part of your question, we have not subjected them to exercise tests yet.

DR. FREDERIC N. SILVERMAN, *Children's Hospital, Cincinnati 29, Ohio.* I have one question and one brief comment. Were the children who died and on whom autopsies were performed, whose lung sections you showed us—were these children x-rayed, and did they have the same roentgen findings as you have described in the children who survived who you believe have pulmonary fibrosis?

DR. SHEPARD. Unfortunately, none of the 3 who died had follow-up x-rays.

DR. SILVERMAN. Then I would raise some objection to the use of the word "scarring" in regard to the other cases because there is no actual proof that the shadows you see do represent scarring in the lungs of these other children. I remember very well the first time that I took over the reading of films for Dr. Caffey when he was away from New York. We had the worst epidemic of bronchopneumonia for which I was the etiologic agent because I overlooked the wide range of normal variation in pulmonary vascular markings. Some of the shadows in the films you illustrated are no different from those seen in healthy children.

It is important to obtain follow-up studies of children who have the respiratory distress syndrome in the newborn period; perhaps the disturbed physiology is associated with anatomic changes too subtle to be demonstrated by x-ray and, for the time being, the use of the word "scarring" is probably best avoided.

9. The child's role in the battered child syndrome

Irvin D. Milowe,** and **Reginald S. Lourie,*** Children's Hospital of the District of Columbia, Washington, D. C.

Introduced by R. H. Parrott

Study of the etiology and parent-child interaction in the "battered-child syndrome" indicates that the cases fall into four categories: A, Defects in the child as a precipitating factor (particularly those defects which lead to lack of responsiveness or other irritating reactions creating frustration in parents). B, "Accidents" (physical damage caused by parental neglect or mishandling). C, Assaultive, unsupervised siblings (leading to beatings, burns, and even death). D, Factors in personality development leading to the child's inviting others to hurt it or hurting itself.

The last group (D) often includes parents who were beaten or "battered" as children and are repeating these patterns with their own children. Some "battered" children also are reared in a "hurt and be hurt" relationship pattern. These children on recovery may continue this type of interaction with adults and children in the hospital. Prevention is possible in all these groups, but is more difficult in D.

DISCUSSION

DR. ROBERT J. HAGGERTY, *Department of Pediatrics, Strong Memorial Hospital, University of Rochester, Rochester, N. Y.* I have two questions about the abstract which I had hoped to have heard discussed, because it does seem to me that this is the type of psychosocial problem about which we need more data and less anecdote.

It is an intriguing idea that the child contributes to the cause of the battered child syndrome. Two of the questions that I had hoped to hear answered are: (1) What is the population from which you drew your sample to study? (2) Does the prognosis differ in those instances of the battered child in which the child contributes to the cause? The reason for the first question is that the experience in two Boston hospitals (The Boston City Hospital and the Children's Hospital Medical Center) is so very different. Those who come into the Boston City Hospital are almost all brought in by police agencies, whereas those

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who are brought to the Children's are brought by their parents. It seems to us that this creates a very different syndrome—different diseases, if you will, in these two hospitals. I was interested in whether the children in your study were brought in by parents or by police agencies. Is there any difference in the child's role in the etiology of this syndrome in those instances referred by law enforcement agencies as compared to those brought by their parents?

The second question about the prognosis was asked because we desperately need at this point to have some idea of which child is at greatest risk. We need to be able to pick out the children who have a high risk of death and disability and those with whom we can play a more waiting game. If the child who plays a role in the cause of this problem has a worse prognosis, this would be a very practical bit of knowledge to the clinician.

DR. MILOWE. With regard to the first question, that about the kind of population: As a hospital with both private and indigent patients we get a cross-section of socioeconomic, ethnic, and other groupings. Some of our children are brought in by parents, others by protective agencies. While one can isolate different patterns, I do not believe anyone can yet speak with certainty about the prevalence in any of the groups or clusters described.

When Dr. Kempe sought information from our hospital about our incidence several years ago, we were unable to give him much information. Our staff isolated some seventy-one cases last year. We are already aware that the pattern of reporting has changed within our hospital and things which are now being called "battered" are not necessarily those which were so designated in the earlier papers. What one emergency room will consider a battered child may not be what a radiologist would. Different hospitals across the country are, thus, selecting different children from the whole spectrum of battered, neglected, and beaten children in their description. Thus, we will not be able to make any firm conclusions about the applicability of the psychodynamic conclusions reached in some groups studied, until we have some better ways of comparing and reporting on the groups themselves.

The problems of patient sampling and those factors which influence our own indices of suspicion make all of our statements about prognosis at the present time premature and uncertain. We have been in the position of being able to look back years afterward on several cases of "accidents" and have usually found (at least in those which circumstances led us to include in our study) that the damage was more likely to be induced in a family setting at a time of peak tension; at times they clearly were not accidents.

DR. A. B. BERGMAN, *Children's Medical Center, University of Washington, Seattle, Wash.* With our increased zeal for making the diagnosis, do you have any thoughts about treading the fine line of protecting the child on one hand, and infringing on a family's privacy on the other, when the child might, in fact, *not* be battered? Also, what are your ideas about the legal liability of physicians and hospitals after turning these cases over to public agencies?

DR. MILOWE. The Children's Bureau has drafted a model law which is being considered in several cities. The difficult and delicate problem you are raising involves the pediatrician; as the child's doctor, he is already involved, protecting some of the child's rights. The problem posed is, how can we protect the parents' rights?

By and large, the groups who have been able to work successfully with parents and to help them (such as Dr. Steele's group in Denver) have been those who have made contact with the parents in the hospital setting, offering help to the parents with the problem regardless of the outcome of the legal and investigating processes. Help is offered to them not only through the difficult times which may be ahead of them legally, but also by helping them to explore what other problems they may have, if they let their child become exposed to such a situation (that it got into an "accident," or because they were unable to control their own willful impulses). In this kind of setting, the hospital staff through its social workers and psychiatrists could be offering help to the parents regardless of the legal processes that would be started with the active reporting.

The particular model law that has been drafted focuses quite directly on the issue of the physician's liability. If adopted it would make it a misdemeanor for the physician not to report trauma that has occurred in the home, for which there is not an adequate explanation. Some cities are now investigating a central registry whereby the responsible person at the registry, by cross-indexing, could find that a child has been treated for four different injuries at four different hospitals over a period of several months, and in this way might be able to pick them up long before there is a subdural hematoma involved.

DR. HARRY MEDOVY, *Children's Hospital, Winnipeg, Manitoba.* I would like to make one comment and ask one question.

I would like to refer to a recent letter published in *Pediatrics* by Dr. Wilson of Vancouver detailing the circumstances involving a family falsely accused of injuring their baby. The baby was removed from their home and actually held in custody for a period of 48 hours before it became evident that the story they told, which was difficult to believe, was in fact correct. I think that this point should be stressed in legislation dealing with the problem of the investigation of this syndrome.

The question I would like to ask has to do with foster homes. We have been disturbed by the frequency with which child beatings have occurred in foster home placements. In each instance the foster home has been carefully investigated and certified as being unsuitable. In most instances the child concerned was a difficult, irritable child who had presented difficulties in hospital or home situations. The occurrence of of beatings in such homes has been very embarrassing to the Children's Aid Society and the physicians involved in the placement. It raises the

question of what to do about the placement of infants and children who are irritable and hyperactive and who are likely to try the patience of all but the most understanding of foster parents. Have you had similar experience with foster home placements?

DR. MILOWE. Again, this is a problem of what to do with the statistics. Many of the groups we have talked with have had several cases in which this has happened. However, the problem of the alternatives is one that has to be weighed. While we know of a few cases where multiple children have been injured in this way in foster homes, I think that most people would agree that most foster homes offer the child more loving and care at the present time in this country, than do most available institutions.

DR. JULIUS B. RICHMOND, *State University of New York College of Medicine, 766 Irving Ave., Syracuse 10, N. Y.* I would like to congratulate the authors for bringing this rather full discussion to our attention. I would also like to second Dr. Haggerty's comment that the abstract itself had much of interest in it which was not presented. I state this because I think that the abstract emphasized, perhaps more than the presentation, the multifactorial nature of the etiology of this syndrome. It is indeed a syndrome with multiple factors which may be causative. I think this is extremely important for us to keep in mind as we see patients and set up additional studies of these families and children.

Now there are two rather brief comments that I would like to emphasize stemming from the presentation.

One, it was emphasized that this syndrome may be mixed with deprivation—that is, the effect of early environmental deprivation in infancy—and I think this bespeaks a very important point in connection with our training programs. If we are to intercept these children and families, in a preventive way, then our house staff really needs to be trained adequately in developmental appraisal in early life. So I would particularly like to emphasize the need for increasing the intensity of our residency training in this direction.

The other point concerning training that I would like to make is this: There is perhaps no other situation in pediatrics so laden with emotional factors for the physician, and particularly for the trainee who has not yet gained enough clinical experience to have objectivity and emotional distance between him and his patient which enables him to appraise the situation more adequately and to make appropriate judgments. I think it important for one of the senior staff to be available to the house staff in these situations. We have seen a number of instances in which the reactions of the house staff have been pretty violent in one direction or another. I might add they do not always go in the direction of wanting to be punitive with the parents. They also go in the direction of denial—that is, denying that anybody should intervene and that physical punishment is indeed a parental prerogative and responsibility. This generally reflects, of course, the personal background of the trainees we have with us. I would like to emphasize the importance of this kind of supervision in training.

DR. MILOWE. There are still too few longitudinal studies which give incontrovertible evidence about the areas of early infant development. Some of them seem to indicate that there were families in which excellent relationships existed between the parents and the children until particular times in the life of the child, when the dynamics of the child's stage of development corresponded with problem areas in the parents' own lives. This seems often to determine at what age a particular child gets battered.

DR. ROBERT J. MCKAY, *College of Medicine, University of Vermont, Burlington, Vt.* I would just like to underline, as Dr. Richmond did, Dr. Haggerty's comment, because we are becoming more and more impressed with the fact that many of these children are very irritating children. Like others, at first, we thought their irritable cry, and so forth, was the result of their injuries. But we are beginning to have serious doubt about it because we have had very young infants whom the nurses have found difficult to take during an eight-hour stint on the ward. And we have now two instances of children who have received very similar batterings, one of them fatal, in two different homes.

DR. MILOWE. I might comment that we became involved with these children because they were frequently in the cubicle farthest from the nurses' station, which is usually the spot (perhaps we should not make this public) the psychiatric consultant on the pediatric ward would usually look. Most groups have commented on the particularly irritable cry. Many of our nurses have also indicated that some of these children are not only difficult to manage, but unappealing. There are a few cases recorded of infants who have quite literally fought their parents during the first few days of life. However, as Gunther's group has indicated, cases like this can develop from particular patterns of breast feeding. What the added effect of neglect, lack of parental stimulation, and varying amounts of physical pain may have upon the child's irritability is difficult to ascertain. Since these children characteristically also have a developmental lag, we are involved in the difficult area of trying to ascertain whether they were atypical from birth, or if the lack of necessary emotional stimulation, coupled with physical abuse, has made them so unresponsive. Our studies of the family interactions at the time of battering, however, indicate that the chronic crying and irritability of the infant are often involved in the long down-hill struggle of the parent to control his or her impulses. Often the critical act of battering occurs at the peak of one of these episodes of sleeplessness, irritable crying, and other intrafamily tensions leading to a reduction in the parents' ability to control their murderous impulses. We have gone into this in some detail elsewhere in papers dealing more specifically with these areas (American Orthopsychiatric Association, 1964).